



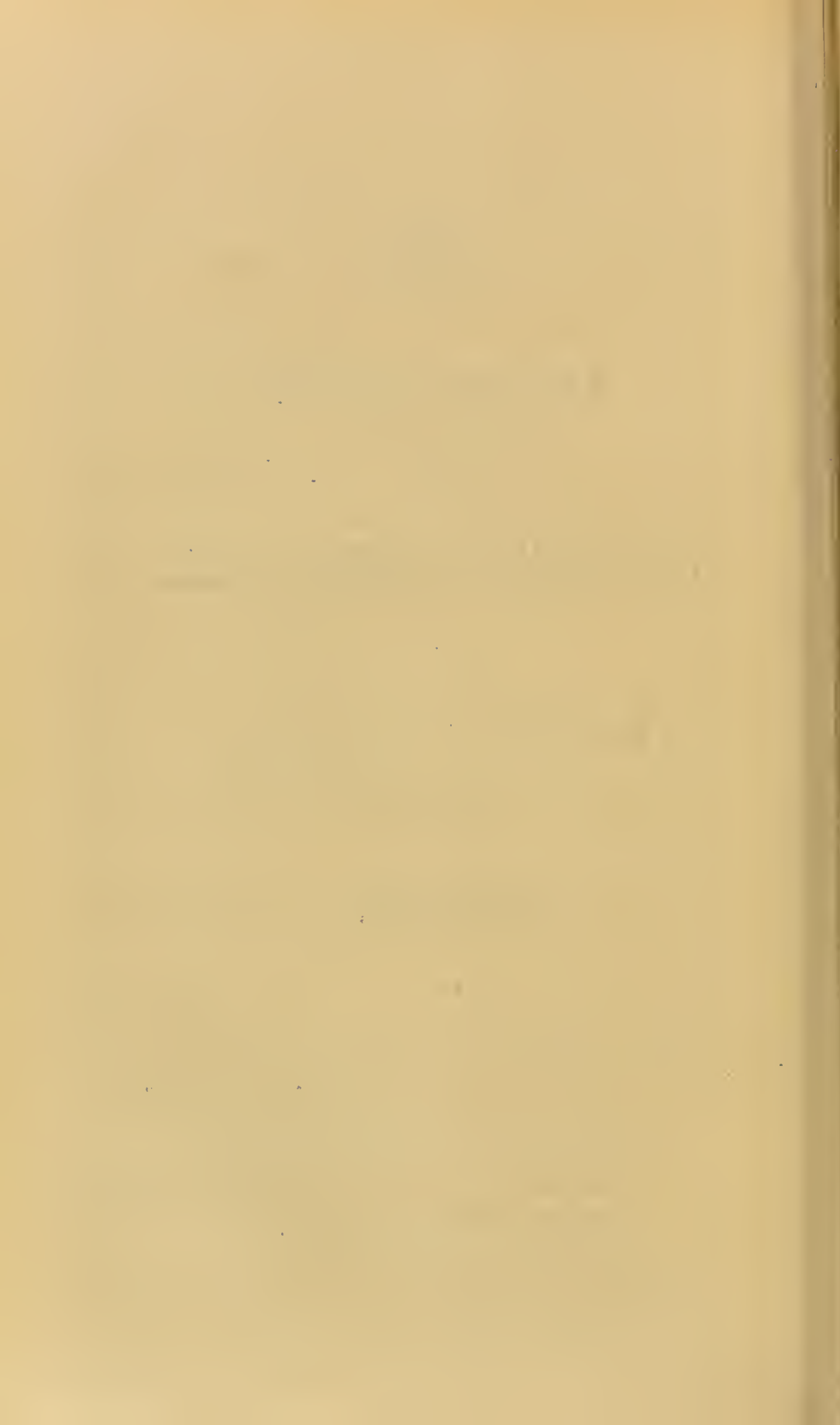
ANNUAL REPORT
ON THE
PUBLIC HEALTH
OF
GIBRALTAR,
FOR THE YEAR
1894,

BY

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VITAL STATISTICS.

Population. This report deals with the civil population only, which at the last census numbered 19,100, a number comprising 16,906 "fixed civil" population and 2,194 "resident aliens."

These numbers form the basis of calculation in estimating the birth and mortality rates of the year. It should, however, be mentioned that the civil population would have increased, according to the Registrar General's method of estimating population at intercensal periods,* to 19,340 by the middle of the year. The difficulty of applying this test to Gibraltar has been explained in previous reports and depends upon the fact that restrictions upon residence and house accommodation interfere here with natural increase of population. It may be mentioned, however, that the effect of taking this estimated increase, instead of the actual census population, as a basis of calculation would be to produce birth and mortality rates slightly lower than those shewn below.

Travellers passing through Gibraltar or residing for short periods in Hotels, &c., and persons landed from the Bay or brought from Spain for medical and surgical treatment are regarded as non-residents and have been excluded from the vital statistics of the locality.

A certain number of residents, probably a very small number, was shewn in the Census return as belonging to the "military population," although they are not included in Army statistics as on the "strength" of the Garrison. These individuals, having been excluded in the Census returns from the civil population, must also be excluded from the vital statistics of that population.

Births. No births are registered amongst the alien population, in consequence of restrictions as to marriage, &c. The birth statistics deal, consequently, with the fixed civil population only.

* *i.e.* According to the formula $P = P^1 (1 + r)^n$. Last year, in consequence of a copyist's error, the estimated increase was published as 19,227 instead of 19,166.

The number of births in 1894 was 477, 261 being males and 216 females. This is equal to a birth rate of 28·21 per 1,000 of fixed civil population.

The birth rates of the previous three years were 29·8 in 1893, 32·23 in 1892, 28·1 in 1891.

The average for the decennial period 1881-90 was 29·35 per 1,000.

The distribution of births according to months is shewn in Table III., Appendix, and calls for no special remark.

The excess of births over deaths amongst the fixed civil population is 75.

In 1893, 1892 and 1891 it was 169, 134 and 136 respectively.

Amongst the "military population" 126 births were registered during the year, as compared with 146 in the previous year.

General mortality. The number of deaths registered during the year was 418 for the total civil population (comprising 402 of "fixed civil" and 16 of resident alien population), 54 amongst the "military population" and 23 amongst "non-residents;" (*i.e.*, persons landed sick from the Bay, &c).

The general death rates of the civil population are shewn in the following table, which is given for the purpose of comparing the mortality of the year with the previous three years and with the decennial period 1881-90:—

General Death-rates.

Population.	Estimated Death-rates per 1000 living.				
	1894.	1893.	1892.	1891	Average 1881-90
Total Civil	21·88	17·74	21·72	18·95	23·03
Fixed Civil	24·37	19·81	24·31	20·70	25·83
Resident Alien... ..	7·29	1·82	1·82	5·4	2·2

It will be noticed that the general death rates of "total" and "fixed civil" population in 1894 closely resemble the corresponding death rates in 1892; and that, although they are considerably in excess of the exceptionally low death rates of the year 1893, they continue to keep below the mortality rates of the previous decennial period.

The fluctuations in the general death rates of the "resident alien" population indicate practically nothing, the figures being too small for the purpose of comparing one year with another. The number of deaths is, besides, largely influenced by the age-groups to which re-

sident aliens belong, and by the fact that individuals in this class are liable to return to their homes in Spain in case of serious illness.

The corrected general death rate for comparison with English towns is 24.02 per 1,000 for the total civil population (factor for correction = 1.09899).

Quarterly mortality. The quarterly mortality is shewn in Table III., Appendix I.

The first and last quarters are practically alike and the second and third quarters are also practically alike, so far as the death rates of the total civil population are concerned. In the quarterly death rates of the fixed civil population, the second quarter is somewhat lower than the others, while there is little difference between the other three.

These results are completely at variance with what has obtained in previous years, the second quarter having almost invariably shewn the highest mortality and the last quarter the lowest. Judging too by the normal rates of mortality for previous years, the cause of the discrepancy must be sought amongst the factors producing greater mortality in the 3rd and 4th quarters rather than amongst those producing a less mortality in the 1st and 2nd quarters.

The results may be, of course, accidental; a contingency one must expect to arise in dealing with the statistics of small numbers, but it will be seen below that a very high proportion of the deaths in August was caused by zymotic and tubercular diseases, and that the deaths of old people were exceptionally numerous during the two last quarters of the year.

Monthly mortality. The monthly mortality is also shewn in Table III., Appendix I.

The highest mortality amongst the total civil population occurred in January and the lowest in May.

Amongst the fixed civil population the lowest was also in May and the highest in December. July and March were also months of high mortality.

The mortality in August is remarkable for the fact that 21 out of the 37 deaths were due to tubercular and zymotic diseases. In 1893 there were only 5 deaths from these diseases in August, in 1892 there were 15.

During the last six months of the year the mortality amongst persons of advanced years was practically double the mortality at the same ages in 1893.

These points indicate, in a way, the general causes of excess in the mortality of 1894 as compared with the previous year.

Infantile mortality. There were 86 deaths amongst children under 1 year of age; equal to an infantile mortality of 180.0 per 1,000 births.

The infantile mortality of the previous three years has been 170.3 per 1,000 births in 1893, 183.4 in 1892 and 152.3 in 1891.

The average infantile mortality for the decennial period 1881-90 was 167.4.

Infantile mortality does not, therefore, compare favourably with previous years, although it will be seen later on that diarrhoeal diseases, the usual cause of a high mortality amongst infants, are considerably less. Zymotic diseases such as small-pox, measles and whooping cough are causes of increase in the year under review.

Age group "under 5 years." Amongst children under 5 years of age there were 149 deaths; equivalent to a death rate of 80.5 per 1,000 living in this age-group.* In the previous three years, 1893, 1892 and 1891, the corresponding death-rates were 71.3, 78.9 and 68.1 respectively. The average for the decennial period was 85.5.

The mortality of this age-group compares unfavourably with immediately preceding years, but is somewhat less than the average mortality of the decennial period 1881-90.

As has already been pointed out, the fluctuations, in dealing with small numbers, are too great to be depended upon for drawing definite conclusions. At the end of the present year, 1895, a better opportunity of discussing the mortality of this important age-group will be afforded, as one will then be in a position to deal with the aggregate statistics of a quinquennial period and to compare them with those of previous quinquennial periods.

Other age-groups. The mortality of other age-groups is shewn in Table II., Appendix I.

The figures call for little remark. As a rule, they follow the normal rules of mortality for the several age-groups.

Compared with the previous year, the greatest discrepancy is found in the age-groups "65 to 75" and "75 and upwards," 100 individuals dying at these ages in 1894 as compared with 70 in 1893. In noting the quarterly and monthly mortalities, attention has already been drawn to the influence of this fact on the higher mortality of the year.

Ages of school life. Compared with the decennial period, there is a slight excess in the mortality of the age-groups of school life ("5 to 20"), due more especially to the increase in the mortality of the

* Population of age-group=1849 at last Census.

age-group 15-20, consequent upon the prevalence of small-pox and tubercular diseases.

Sex mortality. The mortality of the sexes, distributed according to months and age-groups, is tabulated in Table II., Appendix I.

The number of deaths amongst males was 227, amongst females 191.

The following table compares the recorded male and female death-rates of the year with those of previous years :—

“Recorded” Death-rates (Sex mortality).

	Death-rates per 1000 living of each sex.				
	1894.	1893.	1892.	1891.	Average 1881-90.
Males	26·15	18·54	24·1	22·00	25·5
Females	18·33	17·09	19·6	16·41	20·8

The difference between male and female death-rates is more accurately shewn by the “corrected” death-rates of sex mortality as given in the following table :—

“Corrected” Death-rates. (Sex mortality).

Factors for correction.	Per 1000 living.				
Males =1·1339. Females =1·0598.	1894.	1893.	1892.	1891.	Average 1881-90.
Males	29·65	20·97	27·3	24·94	28·80
Females	19·42	18·01	20·7	17·39	21·96

One expects, in Gibraltar, to find, as a normal condition, a very marked difference between the male and female death-rates. A glance at the above tables will shew that this difference has received greater accentuation than ever in the year under review ; and, when one comes to regard it more closely, it will be found that, while the female death-rate has remained practically as low as in previous years, the male death-rate shews a remarkable and noteworthy increase, being in fact higher than the average for the decennial period.

Apart from the general fact that certain diseases, notably the zymotic and respiratory diseases, were higher than they ought to have been, this phenomenal difference appears to be due to one of those fluctuations consequent upon dealing with small numbers. It will be noticed that in the previous year the male death-rate was phenomenally low, very nearly approaching the female death-rate, which remained com-

paratively stationary. In 1894 the male death-rate fluctuates back to the opposite extreme, the female death-rate still remaining comparatively stationary; so that, when one strikes an average between the two years, a normal difference between the male and female mortality is obtained.

This explanation is further confirmed by the fact that the exceptional mortality amongst old people has occurred more amongst males than amongst females, the number of males, who died at ages over 65 years, being 46 in 1894 as compared with 27 in 1893, while the number of deaths amongst females at these ages is 54 in the former, as compared with 43 in the latter year.

This explanation of the increased mortality is not, however, intended to disguise the fact that there has also been an increase in deaths from preventible diseases during 1894. It explains only the phenomenal differences between the male and female death-rates of that and the previous year.

DISEASES CAUSING MORTALITY.

General diseases. An analysis of the registered causes of death will be found in Table I. (Appendix), which is similar to the tables published in previous years. The zymotic, tubercular and respiratory diseases are still further tabulated in Tables III. and IV. (Appendix), in the former of which the chief meteorological features of the year are also shewn.

Zymotic mortality. The principal zymotic diseases caused 69 deaths during the year. This is equal to a "zymotic mortality" of 3.61 per 1000 of the total Civil population. The zymotic mortality of previous years was 2.46 per 1000 in 1893, (the lowest on record), 3.14 per 1000 in 1892, 3.03 in 1891 and 4.88 for the decennial period 1881-90.

Although the "zymotic mortality" of 1894 is, therefore, considerably below the decennial average, a fact of some importance when one considers the prevalence of epidemic disease during the year, it would be manifestly unwise to remain blind to the further necessities of Gibraltar in combating this mortality.

The chief points requiring attention in this connection are noted later on in reviewing the sanitary conditions of the locality.

Small-pox epidemic. Small-pox was epidemic in Gibraltar during 1894.

Its origin. The origin of the epidemic was stated in last year's Annual Report, where a brief note will be found tracing the introduction of the disease from Tangier into the village of "La Tunara" and thence to the surrounding districts. Although isolated cases occurred in Gibraltar during 1893, the disease did not acquire an epidemic form

until the beginning of 1894, when it was found that cases were being concealed in the town.

Its extent. No trustworthy information has been obtained regarding the extent of the disease in neighbouring towns, but that it has prevailed there in a virulent form during the whole period of its epidemic activity in Gibraltar has been gathered from the following sources of information :—

(1). Direct statements of persons residing in Linea, &c., regarding the presence of small-pox in their own or their neighbours' houses.

(2). Frequent detection in the streets of persons from Linea bearing the marks of recent severe attacks of the disease.

(3). Admission into the Colonial Hospital of a patient from Linea, who a day or two afterwards developed small-pox.

(4). Official memoranda, regarding the precautions to be taken to prevent the spread of the disease, issued from San Roque to the hamlets around in December.

(5). Various newspaper notices, giving accounts of the severity and extent of the epidemic in neighbouring Spanish territory.

With a daily influx of between 4000 and 5000 persons from the infected districts, there is little wonder that Gibraltar partook to a certain extent in the epidemic.

Influence of Bay cases. Statements have been made, and are generally current here, that small-pox epidemics in Gibraltar have arisen in the past from the admission of patients from ships into the Segregation Block of the Colonial Hospital. There is no proof of this, and a careful investigation into the small-pox records since 1869 onwards, the year in which Death Registration became compulsory, fails to establish any relationship between Bay cases and town cases.

On the other hand there are records shewing that at the time small-pox prevailed in Gibraltar the disease was also prevalent and virulent in the neighbouring territory.

General features of the epidemic. I have endeavoured to place most of the facts regarding the epidemic of 1894 before the Commissioners in the detailed statement and charts, which form part of the Appendices to this Report, but the following remarks give an account of the general features of the disease.

Number of cases. From the 1st January to the 31st December, 85 cases were noted and eight died.

Duration. Since the 31st December and up to the 20th May 1895, the

date on which this report passed through the press 23 more cases have occurred, and it is not yet time to say that the epidemic is at an end.

Monthly
distribu-
tion.

The distribution of the cases by months is best shewn in the graphic chart (Chart I. Appendix II.), and in Table IV., Appendix I. The former very clearly shews two distinct periods of activity, the first lasting from January to July with its maximum in April, and the second from November 1894 to February 1895 with its maximum in November.

It would appear that the hot dry months had an influence in checking the activity of the disease, and when one notes the monthly distribution of previously recorded epidemics here the fact of its lessened activity in these months appears to be something more than a coincidence.

Comparison
with pre-
vious epi-
demies.

In 1878-79-80 and in 1883-84 epidemics occurred which shewed an exactly similar seasonal distribution, with periods of lessened activity in the hot months and recrudescence in the cold.

A severe epidemic in 1871-72-73 is also similar in many respects, although its monthly distribution does not follow so regularly the rule of subsidence in the hotter and recrudescence in the colder months. The only other epidemic recorded since 1871 is in 1879-80, which in duration is also similar to the others without, however, shewing the same peculiar characters of recrudescence. All these epidemics are graphically shewn in the Chart appended, (Chart I.,) for comparison with the epidemic of the year under review.

This chart will also be found to give an instructive idea of the probable duration of the present epidemic; Epidemics with two periods of activity (*e.g.*, that of 1883) lasting twelve to fifteen months and those with three periods (*e.g.*, 1871-72-73 and 1878-79-80) lasting somewhat more than two years, with intervals of two or three months between each period of recrudescence.

It may be useful to mention here, as factors possibly influencing the extent and duration of these epidemics, that compulsory vaccination came into force on 27th January, 1869, and that no Bye-Laws were issued authorizing compulsory removal to Hospital and disinfection of premises until April, 1883. When these Bye-Laws were made compulsory removal to Hospital could only be enforced in the case of patients occupying tenements for which they paid a rent not exceeding *ten pesetas weekly*. Afterwards an Order in Council was promulgated defining the rent of these so-called "Common Lodging Houses" as "not exceeding *25 pesetas monthly*." An amendment order was passed in 1889 making it *50 pesetas monthly*.

Local distribution. The majority of the cases in 1894 came from the upper portion of the Town, *i.e.*, from the districts lying above Town Range and Engineer Lane, which are the most densely populated districts.

Only eleven cases were from districts in the lower part of the town, and 3 from districts in the South. Two cases were residents in Linea, one a patient in the Colonial Hospital, to which he had been admitted two days before the disease declared itself, and the other a man who was found walking about the streets in the second stage of the disease.

Distribution in tenements. The class of tenement occupied by the 83 cases from Gibraltar is shewn in the following table :—

Distribution of Small-pox cases in Tenements.

Classification of Cases.	Nature of Tenement occupied.			
	1-room.	2-room.	3-room.	+ 3-room.
Isolated in Hospital	32	10	2	3
Not isolated in Hospital	1	1	8	16
*Concealed cases	8	1	—	1
Totals	41	12	10	20

The table shews no marked distinction between the wealthier and poorer class of dwellings. As a matter of fact, in proportion to population, the tenants of the former were attacked, if anything, in a higher ratio than the latter, chiefly because of their not having been isolated in Hospital.

Effects of non-isolation and concealment. The effect of concealment and non-removal to Hospital in maintaining the prevalence of the disease is shown in the statement in Appendix II., detailing the connection of one case with another, and in the following table which gives the facts with regard to the actual number subsequently attacked in the immediate families of persons suffering from the disease.

*Most of these concealed cases were afterwards removed to Hospital for the purpose of disinfection or for further treatment.

Table shewing the spread of Small-pox in families.

Classification of Cases.		Nature of Tenement.				
		1-room.	2-room.	3-room.	+ 3 room	Total.
Isolated in Hospital.	Aggregate number of individuals in the families of persons attacked }	90	47	11	15	166
	Subsequently attacked in same family }	—	2	—	—	2
Not isolated in Hospital.	Aggregate number of individuals in the families of persons attacked }	—	5	22	60	87
	Subsequently attacked in same family }	—	—	1	5	6
Concealed.	Aggregate number of individuals in the families of persons attacked }	20	6	6	12	44
	Subsequently attacked in same family }	8	1	2	2	13
Totals.	Aggregate number of individuals in the families of persons attacked }	110	58	39	90	297
	Subsequently attacked in same family }	8	3	3	7	21

It will be noticed that two cases are shewn as having occurred in families of persons removed to Hospital, but it should be mentioned that these two cases were the result of non-compliance with the order to remove the original case to Hospital, at the time the order was given, the patient eventually being taken to Hospital only after the prosecution of the father and after much delay and adjournment from day to day in the hearing of the case in Court. Although the patient was thus subsequently removed, the disease was so advanced then as to make it hopeless to expect that others of the family would not become infected, especially as they were found never to have been vaccinated.

Amongst the three-room tenement families a family has been entered under the heading of concealed cases. The original case left the tenement for Linca and so escaped notification or detection, al-

though two others in the tenement, duly notified, were subsequently attacked. The existence of the case was verified by reference to the medical attendant in Linea, but it has not been shewn in the return of the cases in Gibraltar.

The Graphic Charts (Chart III. A. B. C. Appendix) shew at a glance the part played in the epidemic by isolation, non-isolation and concealment. The two cases, referred to above as having subsequently occurred in a two-room tenement dwelling after the first case had been removed, have been placed, in preparing the Charts, under the results of "non-isolation at the time of notification," in order to give a more accurate impression of the beneficial effect of isolation in the early stage of the disease.

Concealed cases. The effect of concealment not only upon the families of persons attacked but also upon their relatives and the rest of the community deserves earnest attention. The *data* are unfortunately scarcely suitable for giving a complete record in the form of a graphic chart, (as has been done with the *data* from the families of persons attacked,) and the detailed statement of the groups of cases in Appendix II. must supply, although in a less interesting manner, those facts which may be of importance in enabling the Commissioners to estimate the way in which the disease has been spread by concealed cases.

Connection of cases with one another. This statement shews eight groups of four or more cases, each definitely dependent upon one or other of the cases in the group to which they belong. The original source of the infection in five of the eight groups was concealment of the disease. Insufficient isolation and disinfection were the starting points of the other three groups. These eight groups account for as many as 51 out of the 83 cases, (or 61·4 per cent. of the total number of cases), in addition to 8 others which were registered in 1895 or escaped registration altogether.

A ninth group, accounting for 11 more of the registered cases in 1894, consists of cases distinctly traceable to previous cases or to sources not included in the eight principal groups. Of these 11 cases, four were contracted from known cases in Linea, one from a concealed case and the remaining six from cases insufficiently isolated.

Of the 21 cases unaccounted for in the detailed statement of these nine groups (Appendix II.), 5 were doubtful cases, leaving 16 definite cases of small-pox which could not be attributed to any known contact with a previous case, and which in themselves gave rise to no other known cases. Nine of these cases were following the employment of coal heavers, quarry men, or Linea house agents or were in contact with servants, who frequented Linea regularly. Of the other seven cases one was a gas fitter by trade, one the unvaccinated

child of a charwoman, one a child occupying a house where a case occurred four months previously, one a school boy living in a locality where several cases had occurred during the previous month, and the three others women living under poor circumstances, but with no definite employment.

Influence of vaccination. The influence of vaccination on the ages of the reported cases and in modifying the virulence of the disease is shewn in the following table:—

State as to Vaccination.	Ages of those attacked.											Total cases.	Total deaths.
	Under 3 months.	3 months to 1 year	1 to 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Other ages.		
Vaccinated in infancy or doubtful	—	1	1	6	11	23	15	8	4	3	—	73	*1
Unvaccinated	3	1	1	2	3	1	—	1	—	—	—	12	7
Re-vaccinated	—	—	—	—	—	—	—	—	—	—	—	0	0

The two vaccinated cases under five years of age were two of the five doubtful cases of small-pox noted above. Two of the twelve unvaccinated cases, one 6 years old and the other 11, were subsequently vaccinated but only eight days before the close of the incubation period of the disease, so that they must be included amongst the unvaccinated in estimating the protective influence of vaccination. Both of the cases, however, recovered.

The influence of vaccination in modifying the virulence of the disease is well marked and is more strikingly shewn in the graphic Chart (Chart IV., Appendix), the percentage of deaths in vaccinated cases being 1·39 and in unvaccinated cases 58·3.

The conditions with regard to re-vaccination are considered elsewhere. As none of the cases had ever been re-vaccinated, there are no statistics to bring forward, but it is a significant fact that in two families where cases were being treated at home and where some of the members of the families submitted to re-vaccination and others refused, those, who refused, were subsequently attacked.

Notification. Twenty-four of the 85 cases were without medical attendance and came to the notice of the Health Officer and Sanitary Inspectors on information received from parents or neighbours or during visits to the houses where they occurred.

* Occurred in a person, aged 16, whose vaccination marks were not clearly defined, and whose vaccination in infancy was considered doubtful.

The diseases, with which, on one or two occasions, small-pox was confounded in the notification schedules, were "Influenza" "Fever," "Measles" and "Chicken-pox;" the only wonder is that the difficulty of diagnosis was not greater considering the fact that a measles and an influenza epidemic prevailed during the first period of the small-pox epidemic, and that the eruption of the one and the initial symptoms of the other closely resemble the symptoms of the earlier stage of small-pox.

Other zymotic diseases. Of the other zymotic diseases measles, diphtheria and enteric fever are the most important. With the exception of influenza, which was epidemic in January and February and was returned as the cause of one death, none of the other zymotic diseases attained any prevalence or importance.

Scarlet fever. The six isolated cases, returned as scarlet fever, had no known source, and, as has been noted in previous years, the disease does not appear to acquire any epidemic virulence in Gibraltar.

Measles. Measles, on the other hand, appears to return at regular periods in epidemic form. In the Annual Report for 1893 mention was made of a fear lest it should become epidemic in that year, as several cases, connected in all probability with an epidemic of the disease in Algieras, were reported then. The epidemic, however, was held in check till the beginning of the year under review, when measles began to spread somewhat rapidly in certain districts and attained a *maximum* prevalence in March, gradually declining in April, May and June, till it finally disappeared in July. Energetic measures were taken to prevent the disease becoming extensive and fatal, as had been the case in a previous epidemic in 1887. Each case was visited and all members of the family kept from school. The Sanitary Inspectors made daily visits to the tenement dwellings, where the cases occurred, and the result of their labours in endeavouring to instruct the families as to the value of isolation and fresh air is shewn by the small mortality and comparatively small number of children attacked.

The character of the epidemic as compared with the other epidemics, that have occurred since the notification of Measles became compulsory, is graphically shewn in Chart II., Appendix II.

It will be seen that, although the period of epidemic prevalence and the character of the rise and fall of the curves on the Chart are exactly similar in all three epidemics, the epidemic of 1894, in point of numbers attacked, was very much smaller.

This may be due to the fact of there having possibly been a less number of children susceptible to the disease. From the close of the epidemic in 1882 to the commencement of an epidemic in 1887,

2,157 children were born in Gibraltar, as against 1,568 born between the close of the 1887 epidemic and the commencement of the epidemic of 1890-91, and 1,304 between the close of the latter epidemic till the beginning of 1894; so that, if these numbers are taken as indicating the probable proportion of susceptible cases, the last epidemic should certainly have been the least extensive.

How far this has influenced the character of the present epidemic is shewn in the following table, the proportion of cases to these births being taken as the more accurate method of indicating the possible effects of the special sanitary action taken in 1894. The table shews a very striking difference between the epidemic of 1894 and the two previous epidemics, the percentage of attacks to previous births being only 13 in the former, as compared with 35 and 39 in the two latter.

Measles Epidemics.

Epidemic Periods.	1887	1890-91	1894
Number of births since previous epidemic	2157	1563	1304
Reported cases of measles... ..	861	560	173
Proportion of cases to 100 births	39	35	13

The total number of cases reported in 1894, it will be seen, was 173. The number of deaths, 5, is equal to a mortality from measles of $\cdot 2$ per 1,000 of population, a low mortality as compared with the standard of England and Wales.

No children were attacked in the South districts until the decline of the epidemic, when eight cases were reported. The remaining cases were entirely confined to the town districts, one densely populated tenement dwelling accounting for twenty of them alone. The others were scattered through several districts chiefly as isolated cases, except where two or three of a family living in the same tenement were attacked.

The density of population and the proportion of 1-room tenement dwellings here are so great that the fact of the epidemic having proved so inconsiderable is evidence of the thoroughness of the supervision maintained over the tenements by the Sanitary Inspectors. The infectivity of measles declines so rapidly in fresh air and after the active stage is past that there was every reason to hope that the maintenance of a thorough supervision according to the instructions issued to the Inspectors would have this result.

Diphtheria. Including "membranous croup," the cases of diphtheria

during the year numbered 21; the deaths 9. This is equal to a mortality of $\cdot 47$ per 1000 of population.

In the three previous years (1893, 1892, 1891) the "diphtheria mortality" was $\cdot 41$, $\cdot 47$ and $\cdot 36$ respectively, and $\cdot 95$ per 1000 in the decennial period 1881-90. Although there has been a marked diminution in the mortality from the disease during the last four years, the mortality of $\cdot 47$ per 1,000 is still very much higher than the standard for England and Wales. The disease is practically endemic in Gibraltar and has only occasionally assumed an epidemic form. The cases reported during 1894, all of which were sporadic, throw no further light on the causation of the disease, beyond what can be stated generally regarding want of sanitation in the construction of dwellings and regarding defects of drainage. Thus four children of one family alone were attacked and three died at the beginning of the year in a house which had been constructed some years ago on a plan different from that submitted to the Commissioners for approval, and one which gave every facility for the escape of sewer gas into the tenement. Another case occurred in a house, built against the retaining wall of a private road, in which a large drain was laid. The owner refused to permit the drain to be opened for examination until he was brought before the Police Magistrate. The drain was found in a most defective state and permitted the leakage of sewage into the soil, which practically formed part of the wall of the house in question. These were the most notable examples of the co-existence of Diphtheria and grave Sanitary defects.

The distribution of the cases was irregular. Two only occurred in the South Districts, namely, in December. They were supposed to have been connected with a serious outbreak of the disease in Military quarters at Windmill Hill, but no definite connection could be traced.

Enteric fever. Nineteen cases of Enteric Fever were reported during the year and eight died. This is equal to a mortality of $\cdot 41$ per 1,000 of population. The enteric mortality of 1893, 1892 and 1891 was respectively $\cdot 10$, $\cdot 31$ and $\cdot 20$. It was $\cdot 45$ for the decennial period.

Enteric fever in 1894 has consequently shewn considerably greater prevalence than in the three previous years, although its mortality is slightly below the average for the decennial period.

In proportion to population the South Districts give the highest percentage of cases, and this has generally been the case in previous years also. Amongst the military population, too, the highest percentage of cases in proportion to strength comes from the South, and, although there is no positive proof of the truth of the surmise, there is a strong suspicion that proximity to the lower portions of the main sewerage system is a considerable factor in the production of the disease in these districts.

None of the cases, reported during the year, seemed to be connected with one another.

They were all sporadic and no two occurred in the same family or in the same house.

The water supply was analyzed in each case, but no evidence of contamination was detected. Some of the cases occurred in rooms close to water closets, ventilating on to closed corridors, and the co-existent sanitary defects, if any, were similar to those noted in connection with Enteric fever cases in previous years.

It should however be mentioned that two of the cases were evidently contracted during a shooting expedition in Spain, and three, if not more, were exceedingly doubtful cases.

Continued fever. Continued fevers accounted for six reported cases and one death.

Septic diseases. No cases of puerperal fever or other septic diseases, if one excepts two cases of erysipelas, were notified, but one death from pyæmia, in an infant, was registered.

Chicken pox. Chicken pox was prevalent throughout the year, concurrently with small pox. Each case was carefully observed in order to prevent any error of diagnosis which might lead to the spread of the more dangerous disease, and the results were in every respect satisfactory.

Whooping cough. Whooping Cough prevailed at the close of the year, and, although this disease is not notified, it accounted for three deaths in December and one in November.

The full statistics of these zymotic diseases is shewn in Tables III. and IV., Appendix I.

Other diseases. The other diseases requiring special mention are the diarrhoeal, tubercular and respiratory diseases.

Diarrhoea. Diarrhoeal diseases, in which have been included cases of infantile diarrhoea, usually returned as enteritis and gastro-enteritis, accounted for 34 deaths, of which 8 were in the first, 5 in the second, 13 in the third and 8 in the fourth quarter of the year. This seasonal distribution is similar to what usually obtains not only in Gibraltar but elsewhere. The mortality from diarrhoeal diseases in 1894 is equivalent to 1.78 per 1000 of population.

In the previous three years 1893, 1892 and 1891 it was 1.83, 1.83 and 2.25 respectively.

The mortality for the decennial period was also 2.25 per 1000, so

that the year under review compares favourably with other years in this important respect.

Tubercular and respiratory diseases. With regard to tubercular and respiratory diseases the results are far from satisfactory.

Sixty-nine deaths from the former and 121 from the latter give a mortality per 1000 of population of 3·61 and 6·33 respectively, both rates of mortality being much in excess of the corresponding rates during the previous three years, viz., 2·56 and 4·24 in 1893, 3·29 and 6·12 in 1892, and 2·77 and 5·18 in 1891. They are also in excess of the rates during the decennial period 1881-90, viz., 3·39 for tubercular and 6·15 for respiratory diseases.

Forty-one of the sixty-nine deaths from tubercular diseases in 1894, or approximately sixty per cent., occurred in poor class tenements and in overcrowded damp patios. The greatest mortality was in the last quarter and the lowest in the first quarter of the year. In fact the high mortality from tubercular diseases in the last quarter has helped much to raise the mortality of the year generally above the average.

Overcrowding and dampness are the usual conditions, under which excessive mortality from tubercular diseases occurs, and it was in the latter half of the year that these conditions prevailed most.

Amongst the respiratory diseases pneumonia accounted for nearly half the deaths.

The prevalence of influenza and measles has probably largely influenced this mortality; and, as a matter of fact, it will be found that nearly 64 % of the deaths from respiratory diseases occurred in the first two quarters of the year, when these epidemics were present. Respiratory diseases, therefore, contrast as a whole with tubercular diseases in that the highest mortality of the former occurred in the first half of the year and of the latter in the second half.

The statistics of these diseases are given in Table III. Appendix I.

SANITARY CONDITIONS.

Prevention of infectious diseases. During the year some practical points have come into prominence in connection with the measures available for preventing infectious diseases, although, it must be stated, most of them have been touched upon in previous annual reports. The following are the more important facts:—

(1.) *Isolation*.—It happened that on one or two occasions a tenement nominally rented at more than 50 pesetas monthly, the maximum rent of a tenement from which cases of dangerous infectious disease may be compulsorily removed to Hospital, had been sublet and divided up for the use of several families, and apparently there was no power

to remove cases of small-pox, occurring in the family of the nominal tenants, to Hospital. Groups V. and VIII. of Appendix II. are instances of such cases; and it is scarcely necessary to comment upon the fact that it is as difficult to properly isolate dangerous infectious diseases in these sublet tenements as in the tenements which come under the Bye-Laws.

Difficulties also arose in connection with the isolation of doubtful cases, in consequence of there being no observation ward in connection with the isolation Hospital.

(2.) *Disinfection*.—Instances occurred of persons objecting to having articles of bedding, &c., disinfected in the steam-disinfecting apparatus, which is at present the only adequate method of disinfection available here. Objections of the kind not only obstruct any efforts that may be made to render known *foci* of infection innocuous but may, if persisted in, nullify the results of other measures taken to prevent the spread of dangerous infectious diseases.

On several occasions during the year articles of bedding and clothing, &c., were detained at the disinfecting apparatus for many days, and poor families were subjected to great distress by the delay.

The Commissioners are not, however, responsible for such delay. They labour, indeed, under many disadvantages in having no steam disinfecting apparatus of their own, and the acquisition of such an apparatus is a matter for serious consideration.

Any one, who considers for a moment the hardship to which a poor family is put by the temporary removal of even a single article of bedding or clothing, needs no further argument to convince him of the absolute necessity of avoiding delay in the disinfection and return of such articles. The Commissioners will, no doubt, feel that it is only by having the disinfection processes under their own control and management that promptness and, indeed, economy can be ensured.

(3.) *Notification*.—The number of concealed cases of dangerous infectious disease during the year has been considerable, and, if report be true, there were many undetected cases, known to persons who might have, but would not, bring them to notice. No argument can be too strongly in favour of imposing the duties of notification upon all those who happen to become cognizant of any such cases.

There can be little doubt that, had all cases of Small-pox been promptly notified, the disease would scarcely have become epidemic in the community. The results graphically shewn in Chart III., Appendix II., exemplify this in the strongest possible light.

The Commissioners further labour under the disadvantage of having no official knowledge of the existence of epidemic diseases in neighbouring territory. Early information regarding their extent and severity must always be of value in enabling the Commissioners

to make special preparations for any outbreak of dangerous infectious disease in Gibraltar.

(4). *Vaccination*.—There are several unvaccinated children in Gibraltar, discovered, as a rule, only on their becoming subjects of an attack of small pox. This arises from the fact that children born outside Gibraltar have no vaccination notices served upon them and are not registered, unless they happen to be children of aliens. With the exception of one child of five months old, whose vaccination was postponed, all the unvaccinated persons, who were attacked with small pox during the year 1894, were born outside Gibraltar, i.e., in South America, the Channel Islands or Spain, or, if born in Gibraltar, were under 3 months of age.

Except by registration and serving vaccination notices on the parents or guardians of all children born elsewhere, there seems no possibility of preventing the occasional appearance of severe and fatal attacks of small pox here.

Re-vaccination has been almost entirely neglected. Had it been otherwise, had medical practitioners, that is to say, insisted upon re-vaccinating all members of families attacked, or had the Commissioners power to compel the re-vaccination of all persons occupying crowded tenement dwellings, where small pox cases occurred, it is safe to say that the number of cases during the year would have been diminished by about one third. As an instance of the value of re-vaccination, it may not be out of place to mention that the only case of small pox amongst the troops was a soldier, whose re-vaccination had failed, and yet the troops are practically as much exposed as the civil community to the risk of infection from outside.

Primary vaccination is, on the other hand, fully carried out amongst children born in Gibraltar, and its influence in protecting children and in rendering the majority of the attacks mild in character is undeniable.

Without it, the experiences of the year under review would have been very serious indeed.

Sewerage and Water Supply. With regard to other sanitary conditions in the locality, considerable progress has been made in dealing with the general questions of sewerage and water supply.

The scheme for increasing the latter includes filtration, which is in itself one of the most important requirements of the public water supply here. The analysis of the water from the present collecting areas shewed so high a degree of organic impurity at the commencement of the rainy season that a considerable quantity of the water collected had to be wasted.

The Moorish Castle Tank was emptied and cleansed in September and supplied temporarily with condensed water, but the unfiltered rain

water from the present collecting areas, with which it has since been filled, is far from satisfactory so far as its chemical analysis is concerned.

The Engineer has devised a cheap and efficient method of filtering water in private tanks, which would be of much benefit to the public, and which will, it is hoped, be brought to their notice in time. Filtration has always been one of the *desiderata* here in connection with water supply, and there is certainly some prospect now of having the difficulties in its way overcome.

Private tanks and wells have been dealt with as in previous years, 164 of the former having been cleansed. Some of them were very heavily polluted owing to pollution of collecting areas and to impurities entering the tank from other sources. The well waters, of which 15 were analyzed, shewed the brackish characters possessed by all well waters here.

Milk Supply. Under the new Milk Bye-Laws energetic action was taken during the year and the following are the results of the various analyses :—

Milk Analyses.

Month.	Number of samples analyzed.	Number up to standard.	Number adulterated.
January	8	8	0
February	8	7	1
March	4	4	0
April	12	10	2
May	11	7	4
June	10	6	4
July	13	12	1
August	16	9	7
September	0	0	0
October	31	20	11
November	26	23	3
December	22	21	1
Total	161	127	34

The amount of added water in the adulterated samples varied from 12 per cent. to 55 per cent.

In the previous year 17 samples, of which 12 were found adulterated, were analyzed, the Bye-Laws coming into operation only towards the end of the year.

Twenty milk vendors were prosecuted and fined sums varying from

15 to 125 pesetas. There is reason to believe that most of the adulteration takes place in the shops just before the milk is being sent out for sale by street vendors.

The registration of milk shops and the improvement of their general character are matters which have scarcely been dealt with yet, but they ought certainly to be considered in any scheme for sanitary control over the milk supply of the locality.

Sodawater manufactories and bakeries. The supervision of Sodawater manufactories and bakeries was carried out systematically. Certain improvements have been effected in the latter and the employment of mules in the kneading trough rooms is gradually being abandoned.

Market supplies. The market supplies were satisfactory in quality, especially during the last quarter of the year, when, for the first time, butchers were able to buy their live-stock by public auction in Gibraltar, instead of through a middleman in Tangier.

The diseases noted were, as in previous years, chiefly cysticercari and other parasitic diseases of the internal organs.

Defects in dwellings. The sanitary defects dealt with in habitations are noted in Table V., Appendix I.

With regard to these dwellings, there is little to report, beyond what has been stated in one Annual Report after another for many years back. The chief defects in the construction of old buildings are, generally speaking, those which deprive the living rooms of sunshine and pure air, and favour instead dampness and other impurities of atmosphere. Add to these density of population and overcrowding, and it is hopeless to expect zymotic and especially tubercular diseases to be banished from the locality.

One point, which has not been touched upon previously, is the absence of fire places in many of the living rooms. It has not been considered necessary in this climate to provide means of warming the rooms. Nevertheless the want of fire places is undoubtedly felt and their absence aggravates the evils of dampness and inadequate ventilation, and tends to maintain a high mortality from respiratory diseases in exceptionally wet and cold seasons.

New buildings. With regard to new buildings, there is a marked improvement in the sanitary aspect of many of the plans submitted during the year, but exception must still be taken to the construction of huge artisan blocks on the *patio* system.

Nearly all such houses possess the evils of the back to back system of dwellings, evils which are aggravated by the fact that the *patio*

arrangement deprives the lower rooms of direct light and sunshine, prevents free circulation and favours stagnation of air.

Overcrowd- Overcrowding is still no better than in previous years.
ing.

Though no statistics are available to shew how far it has increased during the year, there is a strong presumption that the population of the tenement blocks has become excessive.

W. G. MACPHERSON,

Surgeon-Major, A.M.S.

Gibraltar, March 20th, 1895.



APPENDIX I.

OF THE

ANNUAL REPORT ON THE PUBLIC HEALTH

OF

GIBRALTAR,

FOR THE YEAR

1894.



STATISTICAL TABLES.

TABLE 1.

Deaths registered in Gibraltar during 1894, amongst the Civil Population, shewing diseases causing death and ages at death.

CAUSE OF DEATH.	At all ages.	Under 1 yr. of age.						OTHER AGE-GROUPS.									
			1 year.	2 years.	3 years.	4 years.	Total under 5 years.	5-10	10-15	15-20	20-25	25-35	35-45	45-55	55-65	65-75	75 and upwards.
General Diseases	172	52	21	7	7	1	88	5	4	5	5	5	14	11	7	9	19
Local Diseases	238	33	17	5	2	3	60	4	2	5	3	19	16	25	32	44	28
Poisons (none) .....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Injuries	8	1	..	..	..	..	1	..	..	..	..	..	3	2	2	..	..
Total...	418	86	38	12	9	4	149	9	6	10	8	21	33	38	41	53	47
CLASS I.																	
GENERAL DISEASES.																	
GROUP A.																	
Small Pox	8	3	..	..	1	..	4	..	1	3	..	..	..	..	..	..	..
Measles	5	2	1	..	2	..	5	..	..	..	..	..	..	..	..	..	..
Influenza	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Whooping Cough	4	2	2	..	..	..	4	..	..	..	..	..	..	..	..	..	..
Diphtheria	7	..	..	2	3	..	5	2	..	..	..	..	..	..	..	..	..
Croup (membranous)...	2	1	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..
Continued Fever	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..
Enteric Fever	8	..	..	..	..	..	..	..	1	..	3	1	2	..	1	..	..
Diarrhoea	34	16	7	1	..	..	24	..	..	..	..	1	..	..	..	3	6
Pyæmia	1	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Syphilis	2	2	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..
GROUP B.																	
Starvation	10	8	2	..	..	..	10	..	..	..	..	..	..	..	..	..	..
Alcoholism	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
GROUP C.																	
Immaturity at Birth ...	5	5	..	..	..	..	5	..	..	..	..	..	..	..	..	..	..
Debility	2	1	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..
Old Age	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	12
GROUP D.																	
Rheumatic Fever	2	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..
New-growths	19	..	..	..	..	..	..	..	..	..	..	..	4	6	4	5	..
Tubercle (unclassified) ..	8	1	2	1	..	..	4	1	1	..	..	1	1	..	..	..	..
“ of Lungs	13	..	..	..	..	..	..	..	..	1	2	2	5	1	1	..	1
“ of Glands	5	2	1	2	..	..	5	..	..	..	..	..	..	..	..	..	..
“ of Brain	17	5	5	1	1	1	13	2	..	..	..	..	1	1	..	..	..
Serofula	2	2	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..
Ricketts	1	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Diabetes	2	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..
Total of General Diseases..	172	52	21	7	7	1	88	5	4	5	5	5	14	11	7	9	19

TABLE I.—Continued.

CAUSE OF DEATH.	At all ages.	Under 1 yr. of age.	OTHER AGE-GROUPS.														
			1 year.	2 years.	3 years.	4 years.	Total under 5 years.	5-10	10-15	15-20	20-25	25-35	35-45	45-55	55-65	65-75	75 and upwards.
CLASS II.																	
LOCAL DISEASES.																	
NERVOUS SYSTEM.																	
Congestion of Brain ...	3	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	1
Sclerosis of Cord	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Inflammation of Brain.	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Apoplexy	12	...	...	...	...	...	...	...	...	...	...	...	1	4	3	4	...
Paralysis	4	...	...	...	...	...	...	...	...	...	...	1	...	...	3	...	...
Hemiplegia	9	...	...	...	...	...	...	...	...	...	...	...	...	4	2	3	...
Cerebral Embolism.....	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Infantile Convulsions...	8	5	3	...	...	...	8	...	...	...	...	...	...	1	...	...	...
Melancholia	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Dementia	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
CIRCULATORY SYSTEM.																	
Heart Disease (unclas- sified)	23	...	...	...	...	...	...	...	...	...	...	2	...	2	4	10	5
Endocarditis	4	...	...	...	...	...	...	...	...	...	...	...	...	1	...	3	...
Pericarditis	3	...	...	...	...	...	...	...	...	...	...	2	1	...	...	...	...
Valvular Disease.....	6	...	...	...	...	...	...	...	...	2	...	1	...	1	...	2	...
Dilatation of Heart ...	2	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...
Angina Pectoris.....	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Aneurism of Aorta ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
RESPIRATORY SYSTEM.																	
Bronchitis	22	9	3	...	...	...	12	1	...	...	...	...	3	1	4	1	...
Asthma ...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Haemoptysis	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Congestion of Lungs...	5	...	...	...	...	...	...	...	...	...	...	1	...	...	3	1	...
Pneumonia	55	10	8	4	2	1	25	2	...	1	1	3	2	6	6	5	4
Gangrene of Lungs ...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Phthisis	26	1	2	...	...	...	3	...	1	2	2	5	7	3	3	...	...
Atelectasis	1	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Pleurisy	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
DIGESTIVE SYSTEM.																	
Teething	3	3	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...
Inflammation of Stomach ...	7	4	1	1	...	...	6	...	...	...	...	...	...	...	1	...	...
Ulceration of Stomach...	3	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Haemorrhage of Intestine	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...

TABLE I.—*Continued.*

CAUSE OF DEATH.	At all ages.	Under 1 yr. of age.	1 year.	2 years.	3 years.	4 years.	Total under 5 years.	OTHER AGE-GROUPS.									
								5-10	10-15	15-20	20-25	25-35	35-45	45-55	55-65	65-75	75 and upwards.
CLASS II.																	
LOCAL DISEASES— <i>Cont.</i>																	
DIGESTIVE SYSTEM— <i>Cont.</i>																	
Obstruction of Intestine	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Ulceration "	1	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...
Hepatitis "	6	...	...	...	...	1	1	...	...	...	...	...	1	1	1	1	2
Cirrhosis of Liver	2	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1
Lardaceous Liver	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Peritonitis	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
LYMPHATIC SYSTEM.																	
Graves' Disease	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
URINARY SYSTEM.																	
Granular Kidney	2	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...
Chronic Nephritis	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Cystitis	3	...	...	...	...	...	...	...	...	...	...	...	...	...	1	2	...
Retention of Urine	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Uræmia	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Dropsy (renal)	2	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1
GENERATIVE SYSTEM.																	
Metritis	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
ORGANS OF LOCOMOTION.																	
Gangrene	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1
Total of Local Diseases.	238	33	17	5	2	3	60	4	2	5	3	19	16	25	32	44	28
CLASS IV.																	
INJURIES.																	
Multiple Injury	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Injury to Cord	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Injury to Skull	2	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...
Suicides—Cut throat	2	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...
Gun shot	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Murder—Injury to skull	1	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Total of Injuries..	8	1	...	...	...	...	1	...	...	...	...	...	3	2	2	...	...

TABLE II.

Sex Mortality amongst Civil Population in 1894, distributed according to Months and Age-groups.

Months.	Deaths at all ages.		Deaths amongst Males according to Age-groups.										Deaths amongst Females according to Age-groups.											
	Males.	Females.	Under 5	5-10	10-15	15-20	20-25	25-35	35-45	45-55	55-65	65-75	75 and upwards.	Under 5	5-10	10-15	15-20	20-25	25-35	35-45	45-55	55-65	65-75	75 and upwards.
January	23	17	10	1	..	..	..	..	2	3	2	2	3	4	1	..	..	..	..	1	1	1	3	3
February	22	14	7	..	..	1	..	2	1	3	3	2	4	3	..	..	..	..	..	1	1	3	2	3
March	22	14	7	..	2	..	..	5	..	..	..	4	2	2	1	2	2	..	3	..	..	2	4	..
April	22	14	9	..	1	..	..	1	3	1	5	1	1	4	..	1	1	1	..	2	..	1	3	2
May	14	15	3	..	..	2	..	..	2	3	..	1	3	9	..	..	..	..	..	1	1	..	1	1
June	18	13	7	..	1	..	..	..	1	5	2	1	1	6	1	..	..	..	1	..	1	2	..	3
July	15	17	2	1	..	1	1	..	3	2	2	1	2	5	..	..	..	..	1	1	1	2	5	2
August	19	18	7	..	..	..	2	1	2	4	..	3	..	10	1	..	1	..	1	..	..	2	3	..
September	19	12	10	..	..	..	1	1	2	2	1	2	..	7	..	..	1	..	1	..	..	3	..	..
October	20	16	6	1	..	..	2	2	1	2	1	3	2	6	1	1	1	..	..	3	1	1	1	2
November	15	19	5	..	..	..	..	1	1	3	..	2	3	5	1	1	1	..	..	1	1	3	1	5
December	18	22	7	..	..	..	..	1	4	2	1	2	1	8	..	..	..	..	1	1	..	2	6	4
Total deaths	227	191	80	3	4	4	6	14	22	31	17	24	22	69	6	2	6	2	10	11	7	24	29	25
Annual death- rate per 1000 at each age ...	26.15	18.33	90.49	3.59	4.51	4.35	6.82	9.60	18.42	37.30	34.48	107.14	275.00	71.50	6.88	2.17	4.87	1.76	5.79	8.65	7.00	32.74	72.50	142.04

TABLE III.

Monthly distribution of Births, Deaths & principal diseases causing death amongst the Civil Population of Gibraltar during 1894.

Months.	Meteorology.			Total Births (Mixed Civil Population).		Deaths from all causes.		Monthly Death-rates per 1000 living (1)		Quarterly Death-rate per 1000 living (1)		Principal zymotic diseases (1)		Deaths from principal zymotic diseases.							Tubercular Diseases. (3)		Respiratory Diseases. (4)	
	Rainfall in inches.	Mean relative humidity.	Mean temperature in shade (Fahrenheit).	Total Births (Mixed Civil Population).		Deaths from all causes.		Monthly Death-rates per 1000 living (1)		Quarterly Death-rate per 1000 living (1)		Principal zymotic diseases (1)		Deaths from principal zymotic diseases.							Tubercular Diseases. (3)		Respiratory Diseases. (4)	
				Total Births (Mixed Civil Population).	Fixed Civil Population.	Total Births (Mixed Civil Population).	Fixed Civil Population.	Total Civil Population.	Fixed Civil Population.	Total Civil Population.	Fixed Civil Population.	Total Civil Population.	Total deaths.	Death-rates per 1000 living by quarters.	Small Pox.	Measles.	Scarlet fever.	Diphtheria (2)	Whooping cough.	Bacterial fever.	Contin'd fever.	Diarrhoea.	Total deaths.	Death-rates per 1000 living by quarters (1)
January	2.58	72	54.1	53	40	35	24.84	25.13	24.84	23.45	24.84	7	3.14	1	1	3	3	3	1	4	3	2.74	11	8.79
February	2.50	73	55.9	33	36	34	24.13	22.61	24.13	23.45	24.84	2	3.14	1	1	1	1	1	1	1	4	2.74	15	8.79
March	6.92	74	57.6	41	35	36	25.55	22.61	25.55	20.10	22.24	6	3.76	2	2	1	1	1	1	3	4	2.93	16	7.32
April	1.69	68	60.3	40	36	34	24.13	22.61	24.13	20.10	22.24	5	3.76	1	1	1	1	1	1	1	4	2.93	18	7.32
May	1.53	69	63.7	43	29	29	20.58	18.21	20.58	20.10	22.24	5	3.76	2	2	1	1	1	1	1	5	2.93	11	7.32
June .....	.02	78	69.7	36	31	31	22.00	19.47	22.00	20.83	23.42	8	4.18	1	1	2	2	2	2	3	4	3.97	6	4.18
July .....	.00	80	74.8	45	32	32	22.71	20.10	22.71	20.83	23.42	11	4.18	1	1	2	2	2	2	4	10	3.97	3	4.18
August .....	.02	79	76.1	41	37	36	25.55	23.24	25.55	23.42	23.42	4	4.18	1	1	1	1	1	1	4	5	3.97	6	4.18
September	2.42	80	72.6	44	31	31	22.00	19.47	22.00	23.03	24.60	4	4.18	1	1	1	1	1	1	4	5	3.97	11	4.18
October	2.50	76	68.1	31	36	32	22.71	22.61	22.71	23.03	24.60	4	3.35	1	1	1	1	1	1	4	6	4.81	7	5.24
November	7.05	82	61.7	29	34	32	22.71	21.36	22.71	23.03	24.60	6	3.35	1	1	1	1	1	1	5	7	4.81	8	5.24
December	3.16	79	58.0	41	40	40	28.38	25.13	28.38	23.03	24.60	6	3.35	1	1	1	1	1	1	1	10	4.81	9	5.24
Totals, means or annual rates per 1000 living	30.39 (mean)	75.8 (mean)	64.3 (mean)	477	418	402	23.77	21.87	23.77	21.85	23.77	69	3.69	8	5	9	4	8	1	34	69	3.61	121	6.33

(1) Calculated on a Total Civil Population of 19100, and a Fixed Civil Population of 16906.

(2) Includes 2 cases of membranous croup.

(3) Includes Phthisis and diseases returned as Tubercular.

(4) Includes diseases returned as Broucheitis, Pneumonia, Phthisis, Tubercle of Lungs, Congestion and Oedema of Lungs.

TABLE IV.

Infectious and Contagious Diseases notified during 1894, under provisions of Section 10,
 "Medical Ordinance, Gibraltar, 1885."

Months.	Cases occurring amongst the Civil Population.																Cases landed from the Bay.											
	Small Pox.		Chicken Pox.		Scarlet Fever.		Measles.		Whooping Cough.		Diphtheria.		Membranous Croup.		Enteric Fever.		Continued Fever.		Influenza.		Erysipelas.		Small Pox.		Enteric Fever.		Continued Fever.	
	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died
January	6	...	5	...	3	...	13	2	...	...	5	2	1	1	...	...	2	...	23	...	...	...	...	3	...	...	...	...
February	3	...	3	...	...	...	41	...	...	...	...	...	...	...	...	...	...	...	35	...	...	...	...	1	...	...	...	...
March	11	1	4	...	1	...	48	1	...	...	1	...	2	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...
April	14	2	4	...	1	...	36	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
May	9	1	1	...	...	...	15	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...
June	7	2	...	...	1	...	18	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
July	7	...	...	...	...	...	1	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
August	1	1	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
September	2	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
October	2	...	1	...	...	...	1	...	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
November	13	...	2	...	...	...	...	...	3	1	1	...	1	...	...	...	...	...	6	...	...	...	...	2	...	...	...	...
December	10	1	8	...	...	...	...	...	...	3	4	1	...	...	...	...	...	4	...	...	...	...	...	2	...	...	...	...
Totals.....	88	8	33	...	6	...	173	5	3	4	17	7	4	2	19	8	6	1	69	1	2	...	9	...	6	3	1	...

TABLE V.

Statement of the chief sanitary defects dealt with amongst the civil habitations of Gibraltar during 1894.

Description of Defect.	Number of Houses in which the defect was noted.
A.—WATER SUPPLY.	
1. Collecting area polluted— — — — —	23
2. Mouth or inlet of tank exposed to pollution — — — — —	24
3. Water in tank impure — — — — —	13
4. Overflow of tank directly connected with drain — — — — —	2
5. Insufficient supply of water for flushing, &c. — — — — —	31
B.—SEWERAGE.	
1. Insufficient W.C. accommodation— — — — —	4
2. Insufficient means of flushing — — — — —	6
3. Situation of W.C. insanitary — — — — —	16
4. Soil pipes leaking — — — — —	9
5. Soil pipes embedded in the walls — — — — —	22
6. Soil pipes unventilated — — — — —	3
7. Fittings, &c., insanitary — — — — —	39
8. House drains defective — — — — —	13
9. House drains connected with adjoining houses — — — — —	5
10. House drains untrapped — — — — —	1
11. Rain gutter pipes connected with drain — — — — —	2
12. Ventilation of W.Cs. insufficient — — — — —	48
C.—KITCHENS.	
1. Sinks untrapped — — — — —	12
2. Sinks directly connected with drains — — — — —	14
3. Without flues — — — — —	7
4. Accommodation deficient — — — — —	10
D.—LIVING ROOMS.	
1. Dirty — — — — —	4
2. Damp — — — — —	10
3. Overcrowded — — — — —	6
4. Badly lighted and ventilated — — — — —	41
5. Generally unfit for habitation — — — — —	10
6. Roofs leaking— — — — —	13
7. Drains under floor— — — — —	6
E.—YARDS.	
1. Badly paved — — — — —	26
2. Badly ventilated — — — — —	3
3. Blocked with stores and refuse — — — — —	8
4. Surface drain traps defective— — — — —	30
5. Fouled by keeping of animals — — — — —	3
F.—PREMISES GENERALLY.	
1. Unfit for habitation — — — — —	2
2. In bad repair— — — — —	4
3. Deficient of refuse receptacles — — — — —	55
Total — — — — —	525



APPENDIX II.



TABLES AND CHARTS

ILLUSTRATIVE OF

MALL-POX & MEASLES EPIDEMICS

IN GIBRALTAR,

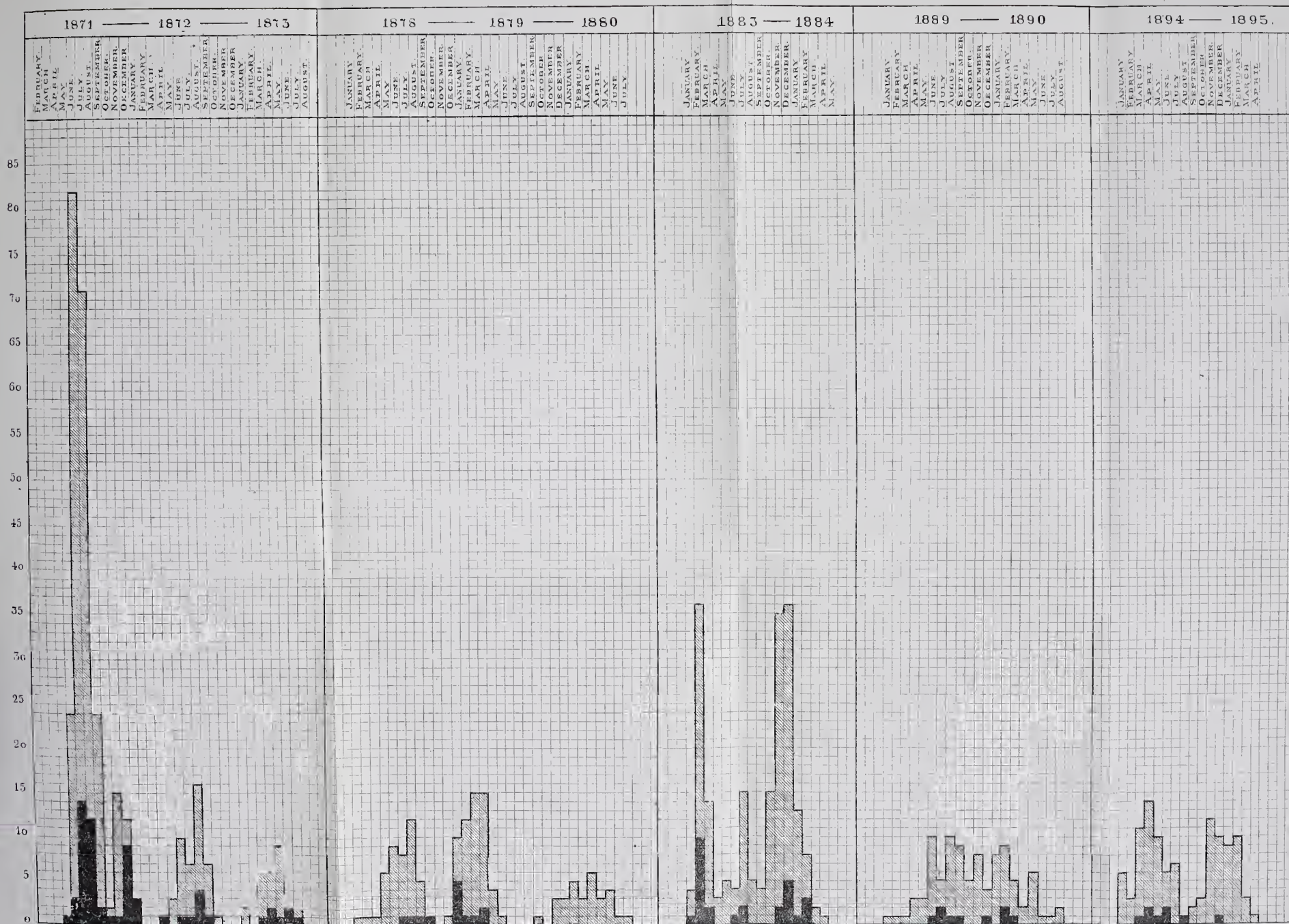
1894.

Groups of cases of Small-pox in 1894. (Civil Population, Gibraltar).

(Those cases marked * died).

Inter No. of Groups.	Source of initial infection.	Registered No. of case.	Date of attack.	Date of removal to Hospital.	Circumstances of exposure to infection.	No. of cases.	Name of Tenement.	Condition as to Vaccination.	How notified.
GROUP I.	Unrecognised case of small-pox and subsequent concealed cases in a crowded tenement.	1	10/12/93	not removed.	Was seamstress in house of a case, notified 20/11/93 as chicken-pox, but which was really a case of small-pox ...	18	1-room.	Infancy.	Concealed case discovered 6/1/94
		2	2/1/94	6/1/94	Sister of case 1 and occupying same room ...	11	do.	do.	do.
		3	3/1/94	6/1/94	Brother of case 1 and occupying same room ...	14	do.	do.	do.
		4	4/1/94	6/1/94	School-fellow of case 3, and in same class ...	9	do.	do.	do.
		5	7/1/94	11/1/94	Brother of case 3, and sleeping in same bed ...	10	do.	do.	do.
		6	7/1/94	11/1/94	Sister ...	8	do.	do.	do.
		7	7/1/94	11/1/94	Source unknown: lives near cases 5, 6, 7, of attack ...	10	2-room.	Infancy.	Concealed case reported 19/2/94
		8	18/2/94	10/2/94	Sister of case 8; lived in same room 1½ days previously ...	15	1 room.	Unvaccinated.	Concealed case discovered 3/9/94
GROUP II.	Concealed cases.	*17	1/3/94	9/3/94	Conin of cases 8 and 17 and in communication with family ...	31	2-room.	Infancy.	First as measles, By Med. Pract.
		19	12/3/94	not removed.	Do. ...	8	3-room.	Unvaccinated.	By Med. Pract.
		*22	26/3/94	Do.	Source unknown: a telegraph messenger living in a patio crowded with tobacco workers from Spain ...	19	3-room.	Infancy.	By Med. Pract.
		11	27/3/94	not removed.	Sister of case 11, living in same tenement; was the only member of family who would not be re-vaccinated ...	21	do.	do.	do.
		18	12/3/94	Do.	Intimate friend and in communication with cases 11 and 18 ...	19	+ 3-rm. sublet 2-room.	do.	do.
		23	1/4/94	Do.	Friend of case 23 & working in same office ...	22	do.	Doubtful.	do.
		27	15/4/94	19/4/94	Lives in same house as cases 11 and 18 ...	16	+ 3-room.	Infancy.	First as measles by Med. Pract.
		30	27/4/94	not removed.	Widow, behind a house full of tobacco workers from Spain ...	18	do.	do.	do.
GROUP III.	Insufficient isolation in crowded tenements.	30	17/5/94	Do.	Acquainted with and in contact with case 36 on 29/4/94 or later ...	24	1-room.	Doubtful.	do.
		42	23/5/94	26/5/94	Tobacco worker in same house as case 36 ...	24	do.	do.	do.
		37	4/5/94	9/5/94	Lived in room of case 27 after case occurred, and father works in house of cases 11 and 18 ...	13	2-room.	Infancy.	First as measles by Med. Pract.
		not registered	21/5/94	In Linca.	Removed case 37 to Hospital. Lives in Linca; refused re-vaccination before ...	?	In Linca.	Infancy.	Not notified, a Linca resident
		48	11/6/94	13/6/94	Brother above case. Visited him while ill at Linca ...	25	1-room.	do.	By Med. Pract.
		41	? Feb. 94	not removed.	Works amongst tobacco workers from Spain ...	?	1-room.	Doubtful.	Concealed case, not detected till 23/5/94
		10	? Feb. 94	28/2/94	Lives next house to case 41. Found walking about streets in third stage of the disease ...	31	do.	Infancy.	Concealed case discovered 28/2/94
		13	28/2/94	3/3/94	Works in same manufactory as case 41. Infirmed with and trepresents same places as case 10 ...	37	3-room.	do.	do.
GROUP IV.	Concealed cases in crowded tenements.	15	2/3/94	8/3/94	Lives in same house with case 13 ...	22	1-room.	do.	First notified as fever.
		46	17/3/94	not removed.	Unknown. Storeman in a grocer's shop. Found after convalescence ...	25	1-room.	Infancy.	Concealed case, discovered 5/6/94.
		40	19/3/94	23/3/94	Sister-in-law of case 46. Living in next house ...	20	do.	Unvaccinated	By husband.
		*44	24/3/94	not removed.	Lives in room above case 46 ...	15	+ 3-rm. sublet	do.	Concealed case, discovered 29/5/94.
		43	25/3/94	28/3/94	Step-brother of case 46 and in communication with him, though living in different district ...	10	1-room.	Infancy.	By father.
		47	4/6/94	11/6/94	Sister of case 40, and occupying same room. Sister-in-law of case 46. Gave birth to child on 7/6/94, which died ...	18	do.	do.	By husband.
		49	12/6/94	not removed.	Aunt of case 44; living in same tenement. Refused re-vaccination ...	17	+ 3-rm. sublet	do.	By Med. Pract.
		50	12/6/94	Do.	Got some old clothes from family of cases 44, 43, 30, after outbreak of small-pox ...	26	Military Qrs.	do.	do.
GROUP V.	Concealed cases in crowded tenements.	51	16/6/94	18/6/94	Sister of case 40 and sister-in-law of case 43 ...	20	1-room.	do.	do.
		52	17/6/94	20/6/94	Brother-in-law of cases 40 & 47, 52, living in Linca, but parents live in house of cases 40 & 47. Found walking about streets ...	24	do.	do.	do.
		59	28/7/94	31/7/94	Unknown. Mixes with Spaniards from Linca in his employment. Servant came to house from Linca 13/7/94 ...	23	Linca.	do.	Concealed case found in streets.
		66	10/11/94	not removed.	Servant in house of case 66; sent out of house when first symptoms appeared ...	23	+ 3-room.	Infancy.	By Med. Pract.
		78	26/11/94	21/12/94	Sister of case 66, and in same house; not re-vaccinated ...	18	do.	do.	By friend to whose house absent on 21/12/94
		75	28/11/94	not removed.	Do. ...	37	do.	do.	By Med. Pract.
		76	28/11/94	Do.	Do. ...	21	do.	do.	do.
		77	28/11/94	9/1/95	Living in room to which case 78 went on 26/11/94; not re-vaccinated ...	17	2-room.	do.	do.
GROUP VI.	Insufficient care in isolation.	Do.	6/1/95	9/1/95	Sister of previous case living in same room ...	21	do.	do.	do.
		71	18/11/94	24/11/94	In contact with cigar-maker who was at the same time nursing a child with small-pox in Linca, and living in a house ...	15	do.	do.	do.
		72	25/11/94	not removed.	Intimate friend & companion of case 71 ...	84	8-room.	Infancy.	By Med. Pract.
		73	25/11/94	26/11/94	Sister of case 72, living in same room ...	19	+ 3-room.	do.	By husband.
		Unregistered.	10/12/94	not removed.	Sister of case 73, living in same room ...	15	1-room.	do.	By neighbour.
		*82	16/12/94	Do.	Had initial symptoms only. Gave birth to case 82 on 16/12/94. Never had eruption ...	17	do.	do.	Not notified.
		85	26/12/94	29/12/94	Born 16/12/94 with small-pox eruption characteristic of 6th day of the disease. Bleeding 17/12/94. Died 14/1/95, still living in same room ...	1 day	do.	Unvaccinated	From Col. Hospital out-patient Dept. By neighbour.
		Unregistered.	10/1/95	18/1/95	A concealed case. Left tenement to stay in Linca to conceal appearance of the disease ...	20	do.	Infancy.	By Med. Pract.
GROUP VII.	Concealed case.	69	20/11/94	not removed.	Tenant of same tenement as previous case ...	19	3-rm. sublet	Infancy.	Not notified.
		70	21/11/94	Do.	Sister of case 69, and in same tenement ...	16	do.	do.	By Med. Pract.
		79	6/12/94	12/12/94	Was at dinner in house of cases 69 & 70 ...	8	2-room.	Unvaccinated.	By Med. Pract.
		83	25/12/94	25/12/94	Brother of case 70 and in same room ...	11	do.	Unvaccinated until 14/12/94	do.
		84	22/12/94	25/12/94	Do. ...	6	do.	do.	do.
		Registered in 1895	1/1/95	not removed.	Lives next room to cases 79, 83, 84, and in contact with them ...	21	+ 3-room.	Infancy.	do.
		Do.	6/1/95	9/1/95	Confined on 25/12/94, by mid-wife, who had that day or previous day been in house of cases 79, 83, 84 ...	?	Military Qrs.	do.	do.
		Do.	18/1/95	9/1/95	Infant of previous case removed to Hospital with her ...	3-week.	do.	After admission to Hospital.	From Small-pox Hospital.
GROUP VIII.	Insufficient isolation and disinfection (?)	25	8/4/94	12/4/94	Slept in room where there was a concealed case, discovered convalescent on 29/4/94. Case 25 was a patient in Hospital from 2/4/94 with fractured skull ...	10	1-room.	Infancy.	From Col. Hospital in-patient.
		26	11/4/94	19/4/94	Father servant in house of case 25, and in contact with him ...	19	do.	do.	By Med. Pract.
		*31	21/4/94	24/4/94	Lives next door to and is brother-in-law of case 26 ...	16	do.	Unvaccinated.	do.
		*45	28/5/94	31/5/94	Intimate with and related to case which left Hospital 21/5/94 ...	15	do.	do.	do.
		54	9/7/94	13/7/94	Occupied afterwards room of a case, removed 20/3/94 and stayed 14 days ...	27	2-room.	do.	do.
		60	26/8/94	not removed.	Intimate with case 54, and lived in same room ...	21	+ 3-room.	Infancy.	do.
		61	30/9/94	12/9/94	Father has been frequenting house of case 60 daily ...	13	1-room.	Doubtful.	do.
		62	14/9/94	not removed.	Nurse of case 60. Refused re-vaccination ...	80	+ 3-room.	Infancy.	do.
GROUP IX.	Insufficient isolation and disinfection (?)	74	23/11/94	Do.	Intimate with case 62, and lived in same room ...	27	do.	do.	First as chicken-pox
		80	10/12/94	13/12/94	Two weeks previously lived in Linca, in house where there was small-pox, and where some people had died from the disease ...	15	1-room.	Unvaccinated.	First as chicken-pox
		81	11/12/94	13/12/94	In adjoining room and intimate with family of case 80 ...	13	do.	Infancy.	Discovered by H.O. on visiting case 80

Smallpox Epidemics since 1870 in Gibraltar

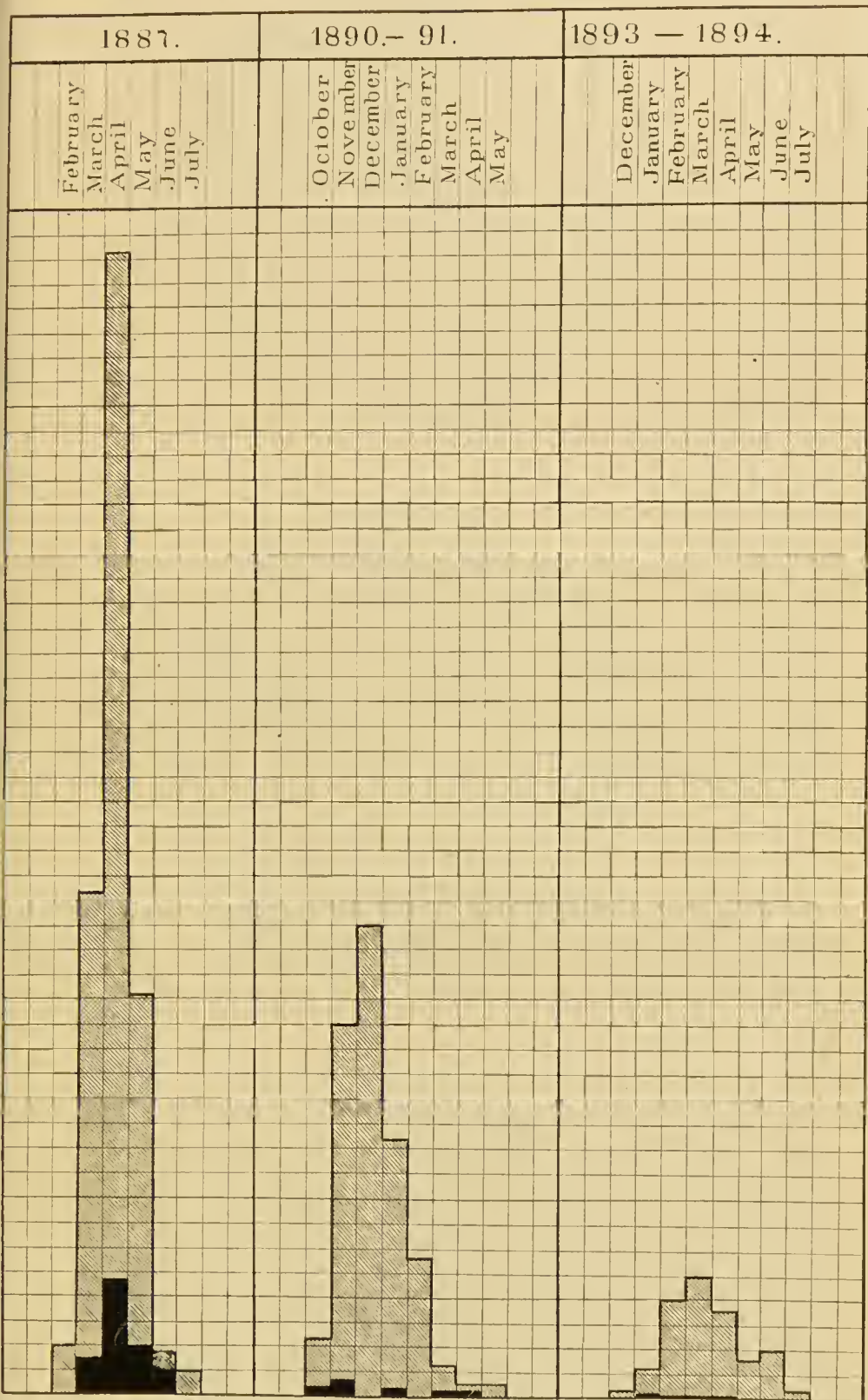


Explanation. The lightly shaded squares represent the number of reported cases, the deeply shaded the number of deaths. Each square equals one case.



Chart II

Measles epidemics (1887 to 1894.)

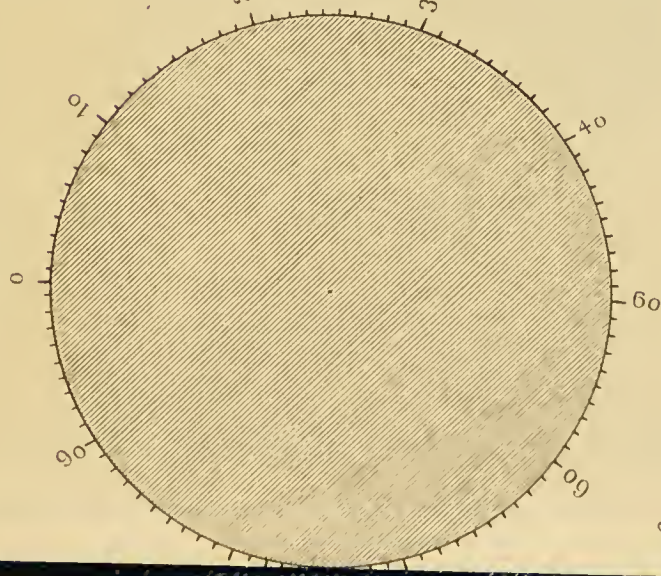


Explanation: The lightly shaded squares represent the number of reported cases. The deeply shaded squares represent the number of deaths. Each square equals ten cases.

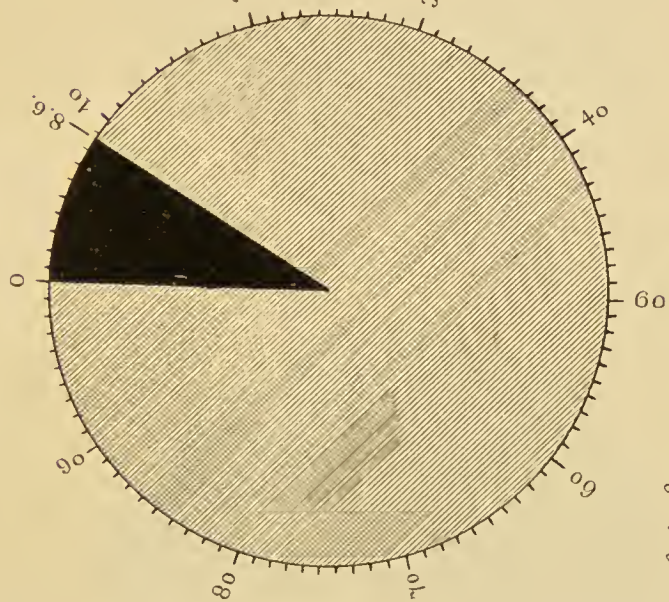


Shewing the influence of isolation, non isolation and concealment in the Smallpox Epidemic of 1894.

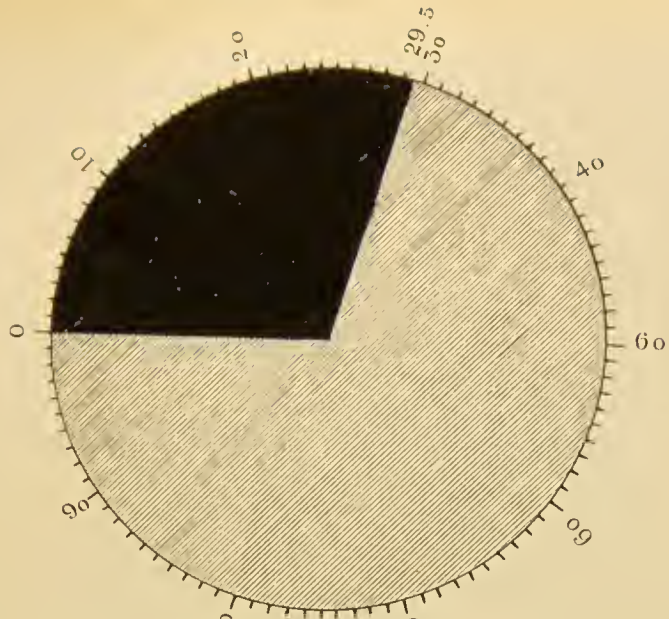
A



B



C



Explanation. The deeply shaded segments of circles A, B and C represent the proportion per cent. of individuals belonging to families, where Smallpox occurred, who were subsequently attacked with the disease; circle A representing families of cases removed at once to Hospital, circle B of cases treated at home and circle C of concealed cases; ∴ the percentage of subsequent attacks in circle A = nil, circle B = 8.6, circle C = 29.5

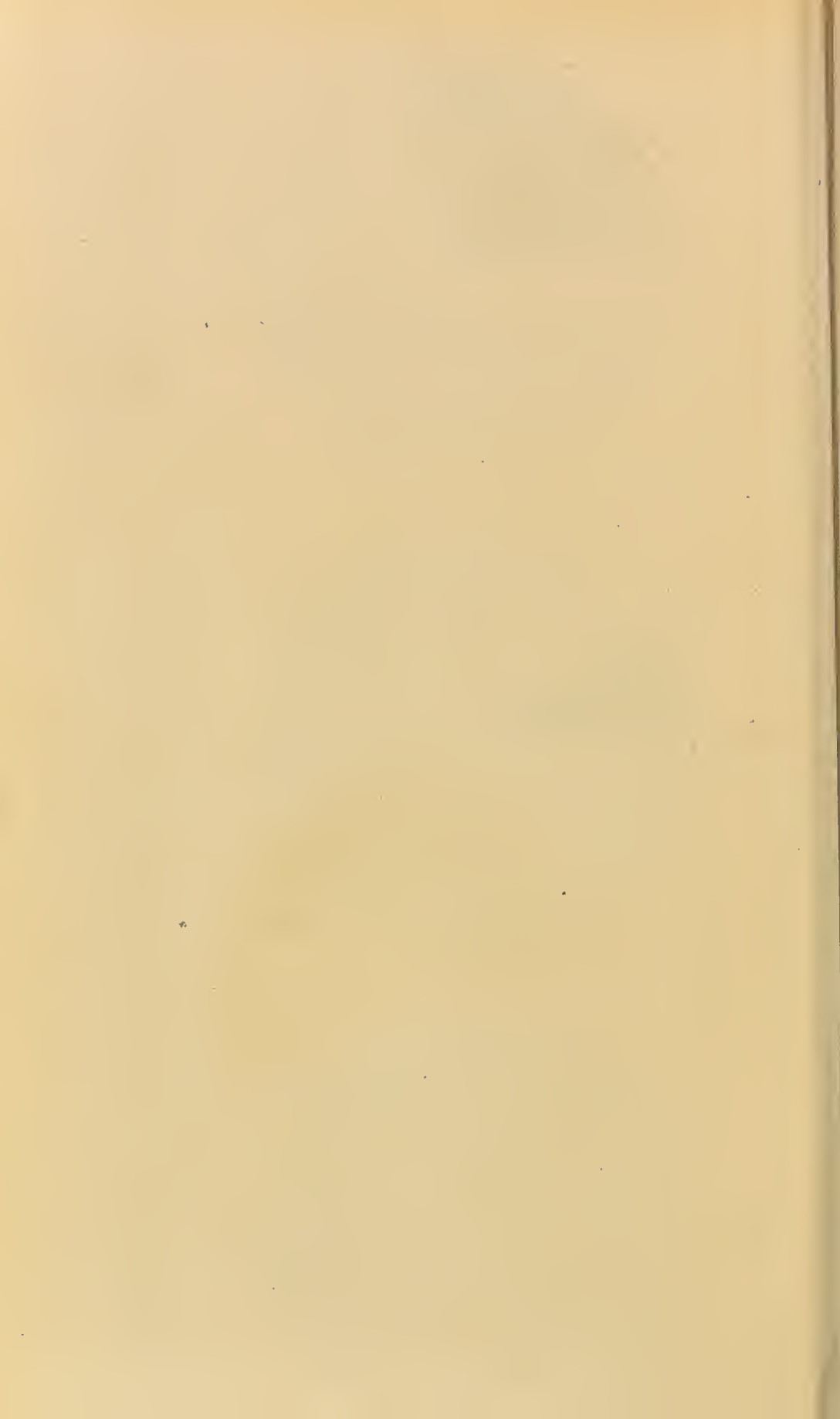
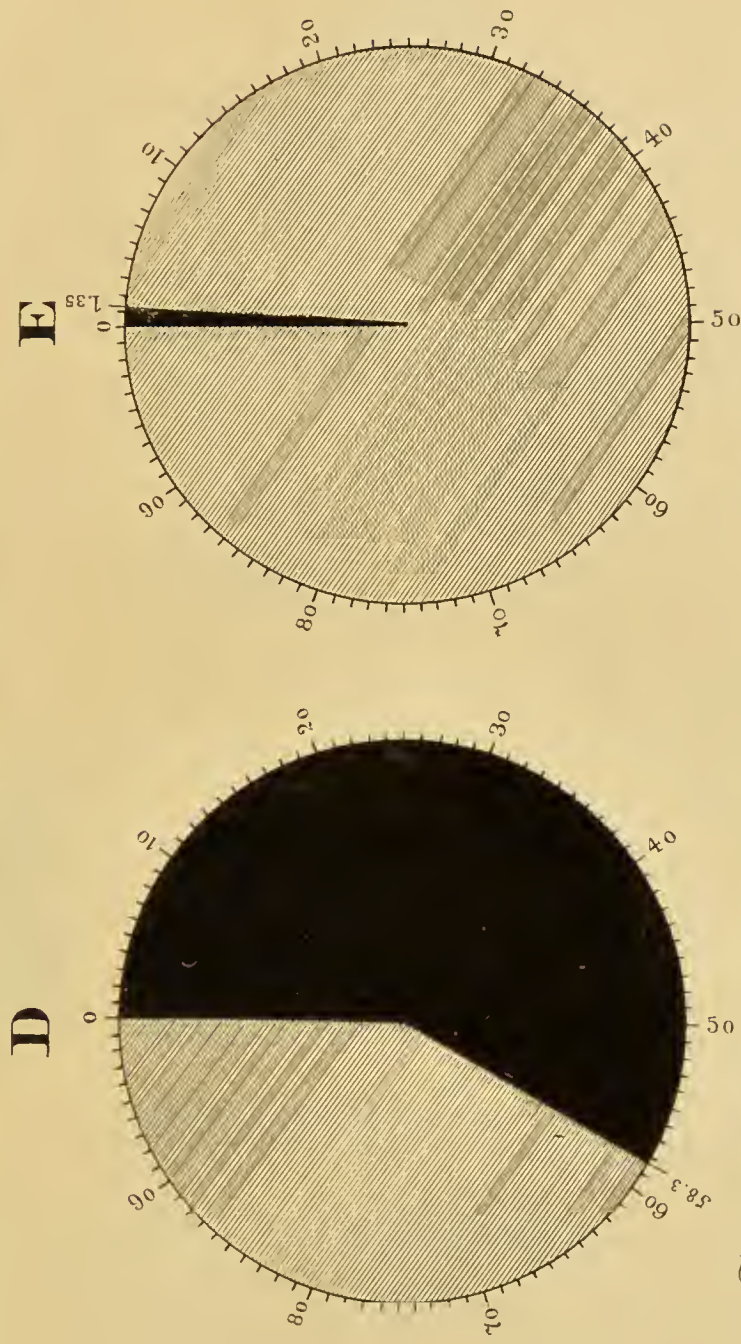


Chart IV

showing the mortality amongst vaccinated and unvaccinated cases in the Smallpox Epidemic of 1894



Explanation. The deeply shaded segments of circles D and E represent the proportion per cent. of fatal cases, circle D representing unvaccinated and circle E vaccinated cases. i.e. the percentage of fatal cases in circle D (unvaccinated) = 58.3 and in circle E (vaccinated) = 1.35.

